

Nalco Docket No.: 7673P2  
Customer No. 000049459

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**REMARKS**

This in reply to the Office Action mailed on February 23, 2005.

Claims 1-20 are currently pending.

Claims 1-4 are rejected under 35 U.S.C. § 103(a) over EP 0291665 ("Rohm").

Claims 5-11 and 14-18 are rejected under 35 U.S.C. § 103(a) over EP 0291665 ("Rohm") and further in view of U.S. Patent No. 6,001,639 ("Schulein").

Claim 12 is rejected under 35 U.S.C. § 103(a) over EP 0291665 ("Rohm") in view of U.S. Patent No. 5,827,432 ("Huhtamaki").

Claims 19 and 20 are rejected under 35 U.S.C. § 103(a) over EP 0291665 ("Rohm") and U.S. Patent No. 6,001,639 ("Schulein") in view of U.S. Patent No. 5,827,432 ("Huhtamaki").

Claims 1-20 are rejected under 35 U.S.C. § 103(a) over U.S. Patent Nos. 6,733,673 or 6,733,674 ("Sarker 673" and "Sarker 674").

Claims 1-20 are rejected under the judicially created doctrine of obviousness-type double patenting over U.S. Patent Nos. 6,733,673 or 6,733,674 ("Sarker 673" and "Sarker 674").

The specification is amended to update the status of copending 10/059,473 and 10/374,891.

Claims 4 is amended to particularly point out and distinctly claim subject matter which Applicant regards as his invention. Support for this amendment is found in original claims 1 and 4.

No new matter is added by this amendment.

Nalco Docket No.: 7673P2  
Customer No. 000049459

OFFICIAL

### DISCUSSION

#### The Rejection of Claims 1-4 under 35 U.S.C. § 103(a) over EP 0291665 ("Rohm").

Claims 1-4 are rejected under 35 U.S.C. § 103(a) over EP 0291665 ("Rohm"). In particular, the Examiner states.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0291665 Rohm. Rohm disclose (see pages 2-8 of translation) a method of clarifying and dewatering an wastewater including sludge substantially as claimed. The claims differ from Rohm as applied above by reciting that the wastewater is an industrial wastewater, industrial sludge, or a specific aerobic digestion sludge. It is submitted that the sludge clarified and dewatered in Rohm is considered patentably indistinguishable from the wastewater and sludges recited in the instant claims. It would have been obvious to one skilled in the art to utilize the method of Rohm to treat the recited wastewater and sludges, to aid in separating solids from the wastewater and dewatering the sludges.

Office Action at page 2.

Applicant respectfully traverses this rejection.

As discussed in the specification at page 2, line 1 to page 3, line 11, Applicant respectfully asserts that industrial wastewater and sludges are considerably different from the biologically clarified sludges described by Rohm.

More particularly, Applicant respectfully asserts that industrial wastewater and sludges typically contain a high amount of inorganic solids compared to municipal sludges where the inorganic solid content is minimal. Furthermore, the organic loading of industrial sludges is generally significantly higher. As a result, in industrial wastewater applications, the systems are typically under stressed conditions due to the influx of the recited contaminants. The biological systems employed can digest a small (100 ppm or less) amount of the materials but normally the "oils" found in these streams are water-soluble (methanol, ethanol, surfactants, etc.) and the biological system goes into "stress" conditions. Under stress conditions, the bacteria will produce a large amount of polysaccharides to protect themselves. Dewatering of sludge in a stress condition is difficult and leads to low cake solids.

Nalco Docket No.: 7673P2  
Customer No. 000049459

**OFFICIAL**

Applicant respectfully asserts that Rohm does not teach or suggest that the treatments disclosed therein would be efficacious for treating industrial sludges, or provide a basis for selecting a cellulolytic enzyme preparation from among the numerous treatments disclosed therein. Accordingly, Applicant respectfully requests withdrawal of the rejection of claims 1-3 under 35 U.S.C. § 103(a) over Rohm.

With regard to claim 4, Applicant respectfully asserts that ATAD sludges represent a new and fundamentally different class of sludges. *See* specification at page 5, line 6 to page 6, line 5. As discussed therein, the high temperatures used in the ATAD process necessitate the use of thermophilic (high temperature) bacteria as the bacteria used in aerobic digestion at ambient temperature are killed at ATAD process temperatures. These thermophilic bacteria produce various biopolymers such as polysaccharides, starch, proteins and lipoglycoproteins which soak up water and inhibit its release, making dewatering difficult.

Applicant respectfully asserts that Rohm does not teach or suggest that the enzyme treatments disclosed therein would be efficacious for treating ATAD sludges, or provide a basis for selecting a cellulolytic enzyme preparation from among the numerous treatments disclosed therein. Accordingly, Applicant respectfully requests withdrawal of the rejection of claim 4 under 35 U.S.C. § 103(a) over Rohm.

The Rejection of Claims 5-11 and 14-18 under 35 U.S.C. § 103(a) over EP 0291665 and further in view of U.S. Patent No. 6,001,639

Claims 5-11 and 14-18 are rejected under 35 U.S.C. § 103(a) over EP 0291665 ("Rohm") and further in view of U.S. Patent No. 6,001,639 ("Schulein"). In particular, the Examiner states:

The claims differ from Rohm as applied above by reciting that the enzymes comprise a specific mixture or preparation including endoglucanase. Schulein et al. disclose (see col. 1 lines 20-52 and col. 41 line 63 through col. 42 line 9) that it is known in the art to utilize enzyme preparations including endoglucanase activity to improve degradability in waste water plants. It would have been obvious to one skilled in the art to modify the method of Rohm by utilizing the recited mixture and preparation in view of the teachings of Schulein et al., to aid in degrading cellulose in the wastewater dewatering the sludges. The specific mixtures and preparations would have been an obvious matter of process optimization to one skilled in the art,

Nalco Docket No.: 7673P2  
Customer No. 000049459

**OFFICIAL**

depending on the wastewater treated and results desired, absent a sufficient showing of unexpected results.

Office Action at pages 2-3.

Applicant respectfully traverses this rejection.

Applicant respectfully asserts that Schulein proposes a variety of uses for the endoglucanase preparations disclosed therein including in the textile industry (in bio-polishing and stone washing applications, ingredients in detergent or fabric softener compositions), in the pulp and paper industry (debarking, deinking, defibration and fiber modification and as dewatering aids) and in the food industry for improving the yield in wine, fruit or vegetable juice. Schulein does not suggest that endoglucanase would have any utility for clarification and dewatering of wastewater and sludges. Similarly, Rohm does not suggest any similarity between dewatering and the processes proposed in Schulein or suggest that endoglucanase would be useful for dewatering industrial sludges. Accordingly, Applicant respectfully asserts that there is no incentive for combining the teachings of Schulein and Rohm, and even if the references are combined, there is no incentive for applying the combined teachings to the problem of dewatering industrial wastewater and sludges. Accordingly, Applicant respectfully requests withdrawal of the rejection of claims 5-11 and 14-18 under 35 U.S.C. § 103(a) over Rohm and further in view of Schulein.

The Rejection of Claim 12 under 35 U.S.C. § 103(a) over EP 0291665 in view of U.S. Patent No. 5,827,432

Claim 12 is rejected under 35 U.S.C. § 103(a) over EP 0291665 ("Rohm") in view of U.S. Patent No. 5,827,432 ("Huhtamaki"). In particular, the Examiner states:

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0291665 Rohm as above, and further in view of Huhtamaki et al. 5,827,432. The claim differ from Rohm as applied above by reciting that the addition of a coagulant to the wastewater. Huhtamaki et al. disclose (see col. 5 line 29 through col. 7 line 12) that it is known in the art to add a coagulant to aid in separating solid matter from a sludge. It would have been obvious to one skilled in the art to modify the method of Rohm by addition of a coagulant in view of the teachings of Huhtamaki et al., to aid in separating solids from the wastewater.

Nalco Docket No.: 7673P2  
Customer No. 000049459

**OFFICIAL**

Office Action at page 3.

Applicant respectfully traverses this rejection.

Applicant respectfully asserts that Huhtamaki discloses one of many variations on the well-known use of coagulants in solid-liquid separation, including dewatering. Nonetheless, as discussed above, Applicant respectfully asserts that use of cellulose enzyme preparations and flocculants for dewatering of industrial wastewater and sludge is novel and nonobvious over Rohm. As claim 12 merely represents adding a known reagent or process step to a process that is otherwise novel and nonobvious, Applicant respectfully asserts that claim 12 is also novel and unobvious and respectfully requests withdrawal of the rejection of claim 12 under 35 U.S.C. § 103(a) over Rohm in view of Huhtamaki.

The Rejection of Claims 19 and 20 under 35 U.S.C. § 103(a) over EP 0291665 and U.S. Patent No. 6,001,639 in view of U.S. Patent No. 5,827,432

Claims 19 and 20 are rejected under 35 U.S.C. § 103(a) over EP 0291665 ("Rohm") and U.S. Patent No. 6,001,639 ("Schulein") in view of U.S. Patent No. 5,827,432 ("Huhtamaki").

Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0291665 Rohm Schulein as above, and further in view of Huhtamaki et al. 5,827,432. The claim differ from Rohm as applied above by reciting that the addition of a coagulant to the wastewater. Huhtamaki et al. disclose (see col. 5 line 29 through col. 7 line 12) that it is known in the art to add a coagulant to aid in separating solid matter from a sludge. It would have been obvious to one skilled in the art to modify the method of Rohm by addition of a coagulant in view of the teachings of Huhtamaki et al., to aid

Office Action at page 3.

Applicant respectfully traverses this rejection.

As discussed above, Applicant respectfully asserts that Huhtamaki discloses one of many uses of coagulants in solid-liquid separation, including dewatering. As further set forth above, Applicant respectfully asserts that this invention is novel and nonobvious over Rohm in view of

Nalco Docket No.: 7673P2  
Customer No. 000049459

**OFFICIAL**

Schulein. As claims 19 and 20 merely represent adding a known reagent or process step to a process that is otherwise novel and nonobvious, Applicant respectfully asserts that the claims are also novel and unobvious and respectfully requests withdrawal of the rejection of claims 19 and 20 under 35 U.S.C. § 103(a) over Rohm and Schulein in view of Huhtamaki.

The Rejection of Claims 1-20 under 35 U.S.C. § 103(a) over U.S. Patent Nos. 6,733,673 or 6,733,674

Claims 1-20 are rejected under 35 U.S.C. § 103(a) over U.S. Patent Nos. 6,733,673 or 6,733,674 ("Sarker 673" and "Sarker 674"). In particular, the Examiner states:

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sarker et al. 6,733,673 or 6,733,674. Sarkar et al. (673) (see col. 1 line 5 through col. 3 line 15) and (674) (see col. 1 line 10 through col. 4 line 32) a method of dewatering a sludge substantially as claimed. The claims differ fro Sarkar et al. (673) or (674) by reciting that the method includes dewatering industrial wastewater. It is submitted that the industrial sludge dewatered in Sarkar et al. (673) or (674) includes wastewater which appears to be clarified with the dewatering devices utilized to separated coagulated and flocculated solids or sludge from the water. It would have been obvious to one skilled in the art to modify the method of Sarkar et al. (673) or (674), by separating the coagulated and flocculated solids from the water present in the sludge, to produce clarified wastewater.

Office Action at page 4.

Applicant respectfully traverses this rejection.

Applicant respectfully asserts that Sarkar 673 and 674 concern dewatering sludge using cellulolytic enzymes, oxidants and flocculants. In contrast, this applications recites a method of clarification and dewatering that does not require the use of oxidants to activate the enzymes. Applicant respectfully asserts that this result is not suggested in Sarkar 673 and 674. Accordingly, Applicant respectfully requests withdrawal of the rejection of claims 1-20 under 35 U.S.C. § 103(a) over Sarker 673 and "Sarker 674.

Nalco Docket No.: 7673P2  
Customer No. 000049459

**OFFICIAL**

**The Rejection of Claims 1-20 under the judicially created doctrine of obviousness-type double patenting over U.S. Patent Nos. 6,733,673 or 6,733,674**

Claims 1-20 are rejected under the judicially created doctrine of obviousness-type double patenting over U.S. Patent Nos. 6,733,673 or 6,733,674 ("Sarker 673" and "Sarker 674"). In particular, the Examiner states:

Claims 1-20 are rejected under the judicially created doctrine of obviousness type double patenting as being unpatentable over claims 1-10 of U.S. Patent No. 6,733,673 or claims 1-11 of U.S. Patent No. 6,733,674. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims appear to be fully encompassed in the claims of the patents, respectively. It is submitted that the wastewater or sludge, and clarifying of wastewater as recited in the instant claims appears to be included in the claims of the parents.

Office Action at page 4.

Applicant takes note of this rejection and is prepared to file a terminal disclaimer in the event that common subject matter remains when the claims of this application are placed in condition for allowance.

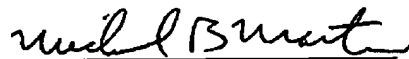
Nalco Docket No.: 7673P2  
Customer No. 000049459

**OFFICIAL**

**CONCLUSION**

In view of the foregoing amendment and remarks, Applicant respectfully requests withdrawal of the rejections under 35 U.S.C. § 103(a) and respectfully asserts that this application is in condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully Submitted,



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